The Study on the Methods for Eliminating PPP

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This report will introduce:

The inter-comparison for all proposed methods to eliminate PPP by deal with a data base (refer to Table 1); a new and the best method to eliminate PPP: Selectively making suitable correction for systematic errors according to the relative extent of discrepancy.

The causes for PPP include: there are not such data which restrict each other; there are some data points with larger discrepancy; the systematic errors are relatively too larger; the errors are quoted in percentage; the grid format about energy.

In Table 1, the Rel-Cs and Rel-Cov refer to averaged calculated cross section and covariance, the 'We-Av' refers to the weighted averaged values, L-PPP refers to lower PPP, H-PPP refers to higher PPP. All proposed methods are effective to eliminate PPP, but the opinion as follow is presented for discussing. The evaluation procedure should be a very objective procedure. Usually the experimenters have credible information to quote the statistical errors, it should not be changed if have not special new evidences; if it is in term of percent, the denominator must be experimental values, not the unknown estimate values. Usually it is hard to quote the systematic errors exactly; to change systematic errors is reasonable and acceptable in evaluation procedure.

The Cox-Box transform changes both all data and errors, it's hard to be accepted; In 'Chiba' method the absolute errors of data are obtained by multiplying the middle estimate values with relative errors, all statistical errors are changed, in fact the same errors are quoted to every datum at one energy, this is 'over-correction', it is hard to get consensus too. But, the Chen's method –'to selectively make suitable correction for systematic errors according to the relative extent of discrepancy' – just making a little correction (about 12%) for few systematic errors can get the best results. It seems more reasonable and should be considered to use at first.

Table 1 Inter-comparison for proposed methods for eliminating PPP

Title	Chi-S.	Rel-Cs	Rel-Cov	Processing of data and error
1 We-Av	3.703	0.9897	0.140	neglecting non-diago. eleme.of cova. matrix
2 L-PPP	11.11	0.8991	1.000	er=re-est-(mea/est)=re-mea; no any change
3 Chiba	4.027	1.0043	1.115	er = re - est; all errors are changed
4 Zhao.	4.017	1.0040	1.098	er = re - wea; all errors are changed
5 Log	3.940	1.0020	1.113	all cross sections and errors are changed
6 Cox	4.220	1.0104	1.132	all cross sections and errors are changed
7 Chen	3.758	0.9907	1.055	only change few systematic errors
8 H-PPP	11.31	1.130	1.000	er=re-est-(est / mea); opposite to L-PPP
9 RAC	3.379	1.0000	0.971	no any change

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